

PECOS WILDERNESS VISITOR USE CHARACTERISTICS (1973-1985)

REGION III

SANTA FE NATIONAL FOREST

PECOS RANGER DISTRICT

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Title: Pecos Wilderness Visitor Use Characteristics

Region III, Santa Fe National Forest, Pecos Ranger District

Abstract: Wilderness permit information was examined from 1973 to 1985. The information was analyzed to determine the significant visitor use characteristics. Shifts and trend changes in characteristics were documented. Management implications were detailed where appropriate.

Those who will find this report useful include Recreation Staff Officers, District Rangers and any other personnel interested in management of the Pecos Wilderness.

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## I. INTRODUCTION

The primary intent of the 1964 Wilderness Act (Public Law 88-577) was the preservation of natural conditions and outstanding opportunities for solitude. Continued high levels of recreation use in the Pecos Wilderness has challenged the managers ability to attain the goals outlined in the act.

Management of the recreation visitor is essential. Outside of wilderness areas various techniques of facility development and site hardening are appropriate alternatives for visitor management. Within a wilderness the managers must attempt to be as unobtrusive as possible to reduce the impact on the users wilderness experience. The primary technique of management of wilderness visitors must be the management of use including the ability to modify lengths of stay, timing of use, distribution of use, party size, and methods of travel (Lucas 1973).

The development of effective management for a wilderness area requires the ability to analyze the current situation in relation to past trends within the area. The foundation of wilderness management is accurate data related to the resource and its uses (Stankey 1980). Managers that do not have access to baseline data concerning the characteristics of visitor use will be unable to determine when significant trends have developed. They will continue to place emphasis on problems that may not be of high priority and the new emerging problems may be overlooked (Lucas 1985).

A detailed analysis of visitor use information has not been available to the managers of the Pecos Wilderness. Some analysis has been conducted of individual years use statistics but no comprehensive comparison of the visitor data has been prepared.

### A. Historical Perspective

The original Pecos primitive area containing 136,640 acres was created under authority of Regulation L-20, and approved by the Chief of the Forest Service on July 21, 1933. Since that time several changes have occurred. On March 11, 1955 the area was established as the Pecos Wilderness under Regulations U-1 Title 36 C.F.R. Section 251.20. It became a unit of the National Wilderness Preservation System on September 3, 1964. The New Mexico Wilderness Act increased the wilderness to 223,333 acres in 1983. The proposed Santa Fe Land Management Plan proposes an addition of 2138 acres to the wilderness.



Until 1963 wilderness management in the Pecos was primarily custodial. During the 1960's the visitor use began to grow and the management of the area became much more active. On December 21, 1972 Regional Forester, Bill Hurst approved the Pecos Wilderness Management Plan. One of the primary objectives stated in the plan is the distribution and control of users to maintain and enhance high quality wilderness. The Santa Fe Land Management Plan which is nearing completion will replace the wilderness management plan as the primary guiding document for management of the wilderness. The Santa Fe plan also has an objective for distribution and management of the recreation users to lessen the impact on the wilderness resource.

## B. Study Area

The Pecos Wilderness is located in northern New Mexico, near the communities of Santa Fe, Pecos, Las Vegas, and Penasco. The wilderness covers portions of the Espanola, Las Vegas, and Pecos Ranger Districts on the Santa Fe National Forest and the Penasco Ranger District on the Carson National Forest.

The area comprises a portion of the Sangre de Cristo mountains. The wilderness is noted for its beauty and spectacular mountain scenery. Predominant in the wilderness are long sloping ridges and mesas averaging 10,000 feet above sea level covered with forests of aspen and mixed conifer interspersed with large open grass meadows. The area also includes numerous peaks that rise above timberline. Truchas Peak (13,102 ft.) is the highest peak within the wilderness. It is second highest peak within the state of New Mexico. A number of lakes are found at the bases of the highest peaks.

The many streams, lakes, forest areas, meadows, and rugged peaks offer numerous opportunities for recreational uses. Excellent opportunities for fishing and hunting are also available. The wilderness area has 40 trailheads and over 400 miles of trails.

The wilderness is extremely popular and is used extensively for recreation activities. The wilderness has consistently had the highest amount of recreation visitor days of any wilderness in the Region. As with most wilderness areas the use is characterized by poor dispersal. There is a significant problem with the continued use of the same camp sites especially in the sensitive riparian and high elevation zones.

## II. PURPOSE OF STUDY

The primary purpose of this study is the development of a data base of information on the users of the Pecos Wilderness. The data for this study was primarily provided from the Pecos Wilderness permits between 1973 and 1985.

This data has been analyzed to determine the principle trends of the users over this 12 year period. This data will be provided for the managers of the Pecos Wilderness to aid them in the recognition of recreation use trends. It will provide the foundation for improving the management of the recreation users in the Pecos Wilderness.

## III. METHODS

Data obtained from the Pecos Wilderness permit system provides the base information for the analysis of wilderness use characteristics. An accumulation of twelve years of data was analyzed in this study, thus helping to improve the reliability by including a more representative sample of the recreation user over time. The study results and recommendations are designed to give the Pecos Wilderness manager an insight into visitor use characteristics and the management opportunities that exist to improve the wilderness visitors experience and the overall management of the wilderness.

The Pecos Wilderness was the first wilderness in Region 3 to utilize a visitor permit. Utilization of wilderness permits for this analysis will result in a higher degree of reliability than other techniques. Mandatory visitor permits result in a higher rate of compliance and present a more unbiased representation of the various user groups than other non-mandatory methods of visitor registration (Lucas 1980). However it is recognized that permit compliance is not 100%.

The study has been broken into two sections. The first will analyze the visitor use information. The second phase will provide management implications based upon the data.



#### IV. ANALYSIS

Most wilderness management problems are a direct result of recreation use (Hendee, Stankey, Lucas 1978). The analysis of wilderness user information collected from wilderness permits provides a data base for the wilderness manager to formulate management strategies.

The analysis basically consist of a comparison of selected variables and a cross tabulation of some variables available from the wilderness permits. The determination of the variables to be analyzed was based upon direction contained in the Pecos Wilderness Management Plan, and the draft Santa Fe National Forest Land Management Plan.

A wilderness permit system was instituted in the Pecos Wilderness in 1973. This permit was mandatory for all visitors until 1979 when day use permits were dropped.

This change in policy complicates the review of the data. In 1986 the permit system was cancelled.

Compliance with the wilderness permit system varies but observations made by wilderness rangers in the field have determined that average compliance was approximately 85%. This compliance figure was highest in the heavier used areas of the wilderness because of a higher number of wilderness administration people in these areas. The group that appeared to be the largest offender in not obtaining permits were local users that lived close to the wilderness. These were also the groups that had made a traditional use of this area before permits were required. In addition wilderness rangers report that visitors frequently change their plan by shortening their length of stay or not traveling as far as originally planned. No statistics are available on these observations but they should be taken into account when reviewing the permit data.

In addition to the potential wilderness permit inaccuracies described above another situation which occurs is errors in completing the permit and errors in data input. These errors are generally uncommon and for purposes of this study were felt not to be significant enough to be concerned with.

Some computer analysis of Pecos wilderness permits had been performed for the years 1973 through 1980. Wilderness permit information for 1981 and 1982 had been input to a data base at Fort Collins Computer Center but no analysis of the permits had been performed. Data for 1983 was unaccounted for and is not displayed in this analysis. Data for 1984 and 1985 was input into the Computer Center. Data files at Fort Collins were formed with the wilderness permit information from 1977 to 1985 (except 1983).

These files were utilized for the formation of data that was used in this analysis. The data utilized for 1973, 1974, 1975, and 1976 came from the original computer reports that were distributed to each Ranger District that had administrative responsibilities for the Pecos Wilderness.

#### A. Use Characteristics

Some recreation use characteristics changed from 1973 to 1986, and other remained basically unchanged. The use characteristics described in this analysis appear to be consistent with general trends in wilderness recreation use.

##### 1. Length of Stay

The typical visit is relatively short (table 1). In 1973 the average visit was 4.8 visitor days. Trips that ranged from 1-6 days occurred in 81% of the visits. Long trips of 17+ days occurred 3.9% of the time.

In 1985 the average visit had declined to 4.3 visitor days. In addition permits for day use were dropped in 1979. For the period 1973 through 1978 day use permits occurred in 18% of the visits. No statistical sampling of day use permits occurred after 1978 but informal surveys by wilderness rangers indicate that the percentage of day use permits has risen slightly to approximately 20% of visits. When the day use estimate is included with the 1985 permit statistics the average visit would decline to 3.7 visitor days. Long trips (17+) declined to .8% of visits. Trips of 3 through 6 days showed a substantial increase (1973-18.8% 1985-64.6%) while trips of 2 days showed a significant decrease (1973-42.9%, 1986-23.3%).

The average stay of 3.7 visitor days is one indicator of the recreation use distribution problem that exist within the wilderness. In an area the size of the Pecos Wilderness it is apparent that the interior portions of the wilderness are receiving light use. It is also apparent that restrictions based on length of stay are not an appropriate tool for management of visitor use. Restricting the length of trips would produce little benefit because there are so few long trips.

The high percentage of day use and short trips indicates a potential shortage of these types of recreation opportunities outside of the wilderness.



TABLE 1

## LENGTH OF STAY

## PERCENT OF TOTAL USERS

DAYS	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985
D1	18.9	16.7	18.9	18.1	16.9	18.5	2	.9	.5	.5	.3	.2
D2	42.9	46.8	42.3	46	21.9	22.6	24.6	24.3	20.6	22.8	22.9	23.3
D3-4	11.6	13	12.6	10.9	38.3	37.5	45.6	46.7	47.3	49.5	51.5	47.7
D5-6	7.2	7.7	8.4	8.6	13.8	12.5	16.8	17.1	19.4	16.8	15.5	16.9
D7-8	5.9	4.2	4.3	4.7	5.1	5	6.2	6.5	7.3	6.6	6.2	7.4
D9-10	3.1	2.8	4.3	3.7	1.9	1.6	2.2	2.5	1.6	1.4	1.5	1.7
D11-12	3.1	3.2	3.1	3.2	.7	.9	.9	.9	1.1	.5	.8	.6
D13-14	2	1.3	1.4	1.2	.4	.4	.4	.5	.7	.5	.3	.5
D15-16	1.4	1.4	1	.6	.5	.4	.5	.4	.5	.8	.4	.8
D17+	3.9	2.9	3.7	3	.5	.6	.8	.4	1	.6	.6	.9

## 2. Group Size

Average group size declined from 3.7 people in 1973 to 3.4 people in 1985. A majority of the users travel in 2 person groups (table 2). This trend is becoming even more prevalent. In 1973, 37.6% of the groups consisted of two people, by 1985 it had risen to 45.2%. Group sizes of 3, 4, 5, and 6 all showed slight declines from 1973 to 1985. Large groups (6+) were relatively uncommon in 1973 and this remained constant in 1985.

In the Pecos Wilderness Management Plan it was noted that the size of parties must be limited. The majority of the large groups were organized parties such as church, school, and Boy Scouts.

Party size limits of 15 were instituted in the wilderness in 1976. It is apparent that these regulations have been effective in reducing the large group use but the use appears to have been shifted to groups of 11-15 in size which have shown a 1.8% increase since 1973. This may also be an indication that large groups are breaking into 2 or more smaller groups to avoid the regulation. Field observations have also recorded a drop in these groups but they also have determined that organized groups (15+) still are utilizing the wilderness.

Camp areas for small groups have less potential for resource degradation. Dispersal of the small groups is easier because less area is occupied and there are numerous suitable camp locations while camps for larger groups are limited and the same camps are repeatedly used.



### 3. Method of Travel

Foot travel is the primary mode of travel (Table 3). A 1966 registration study determined that 38% of the visitors were hikers and 63% were horse users. In 1973 almost 86% of the people using the wilderness walked. This use has risen to 90% by 1985.

The use of ski equipment is showing some increase in the wilderness. Much of this use is day use and is not available from permit data. Field observations indicate that this use is growing in popularity especially on the Espanola Ranger District in the vicinity of the Santa Fe Ski Basin. Winter use of the National Forest is increasing in popularity within Northern New Mexico and this trend of increased use within the wilderness appears consistent with the general trend.

Although horse use has been decreasing it still occurs at a relatively high level. The potential for resource damage is increased because group sizes tend to be bigger and lengths of stay longer. The grazing requirements of livestock and the trail impacts associated with horses are additional concerns. In 1973 the average stay per visit of people with horses was 7.5 days compared with 4.8 days for an average of all user groups. In 1973 the average group traveling with horses was 4.6 compared to a 3.7 average for all user groups. In 1985 the average stay per visit of people with horses was 5.5 days without horses it was 4.3 days. The average group size of people traveling with horses was 3.7 compared to an average of 3.3 for all user groups.

The potential for conflict between hikers and horse users is very evident. Although the percentage of users utilizing horses is dropping there is still a significant number of users. Some conflict between the user groups is inevitable.

Method of travel is one of the basic variables that influences management strategies (Weaver and Dale 1978). Decisions on trail design, trailhead facilities, trailhead location, and user conflicts must be based in part on method of travel.



TABLE 3

## METHOD OF TRAVEL DISPLAYED BY PERCENT OF USE

YEAR	HIKING	HORSE	SKI
1973	85.7%	14.3%	0%
1974	90.16%	9.73%	.11%
1975	90.6%	8.16%	1.24%
1976	91.32%	7.94%	.74%
1977	91.07%	9.71%	.27%
1978	89.3%	9.71%	.99%
1979	90.56%	8.48%	.97%
1980	89.79%	9.5%	.62%
1981	91.19%	8.81%	0%
1982	89.6%	10.4%	0%
1984	88.03%	11.52%	.45%
1985	90.02%	9.46%	.52%

#### 4. Timing of Use

Summer is the predominant use season (Table 4). This is not surprising due to the high elevation of the wilderness. This pattern of summer use was evident in 1973 and it has not changed in 1985. July is the heaviest use period followed closely by August. These two months account for over 50% of the total use. Winter use is growing but it is not reflected in the permit statistics. This use is primarily day use (cross country skiing) in the Santa Fe area. Informal field surveys by personnel from the Espanola Ranger District are the basis for this observation.

A majority of the users enter the wilderness on weekends or holidays. To make effective visitor contacts managers of the wilderness will need to schedule personnel to be on duty during these peak periods of use.

TABLE 4

% OF GROUPS PRESENT/MONTH

YEAR	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1974	0%	1%	1%	2%	13%	16%	24%	26%	8%	6%	3%	0%
1975	1%	2%	2%	2%	7%	18%	22%	27%	8%	8%	4%	0%
1976	1%	2%	2%	2%	9%	18%	22%	23%	12%	6%	3%	1%
1977	0%	0%	0%	1%	11%	19%	27%	22%	11%	6%	2%	2%
1978	0%	0%	0%	1%	8%	19%	25%	22%	15%	7%	3%	0%
1979	1%	0%	1%	1%	4%	15%	23%	33%	13%	7%	1%	1%
1980	0%	0%	0%	0%	4%	17%	28%	30%	11%	8%	2%	0%
1981	0%	0%	0%	1%	13%	18%	26%	23%	15%	4%	0%	0%
1982	0%	0%	1%	0%	9%	8%	32%	19%	15%	5%	1%	0%
1984	0%	0%	0%	0%	8%	21%	39%	18%	10%	3%	0%	0%
1985	0%	0%	0%	0%	6%	22%	21%	27%	15%	6%	3%	0%

## 5. Origin of Visitor

A review of the origin of visitor data from 1973 indicates that 64% of the user were from New Mexico (Table 5). Santa Fe and Albuquerque were responsible for 51% of the origins. Texas was the origin of 19% of the visitors. Dallas, Austin, Amarillo, Houston, and Lubbock were the principle areas of origin in Texas. Oklahoma was the only other state with a significant percent of origin (3%).

In 1985 New Mexico was the origin of 58.5% percent of visitors. Albuquerque and Santa Fe were responsible for 42.5% percent of the visitors. Texas origins accounted for 26.8% percent of the total visits. Oklahoma origins accounted for 3.8% percent of the total visits.

A review of the data did not indicate any significant changes in the state of origin for the wilderness visitors. There were changes from year to year but no trend in states of origin could be discerned. The average percentage of permits from the primary using states was New Mexico (62.5%), Texas (22.5%), and Oklahoma (3.49%).

One interesting item is the decline in use for Santa Fe from 28.5% in 1973 to 14.6% in 1985. Much of this decline can be attributed to the dropping of day use permits in 1979 but it also appears as if the users are coming from other locations.

Visitor education efforts can benefit from a close analysis of the point of origin data. An understanding of where visitors come from is essential for development of an effective visitor education and informational program. An average of 22.5% of use comes from Texas. For a visitor education program to be effective it will have to focus on the Texas users as well as the users from New Mexico.

TABLE 5

RESIDENCE OF VISITORS  
PERCENT OF PERMITS

RESIDENCES	1973	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985
<u>NEW MEXICO</u>											
ALB.	22.9	22.7	31.4	31	25	25.6	28	34.3	27.7	24.3	27.9
SANTA FE	28.5	25	12.6	11.4	17.4	17.8	16.7	5.2	22.2	19.9	14.6
LOS ALAMOS			4.4	4.5	7.7	7.1	5.2	1.2	1	6.2	1.2
LAS CRUCES	.6	.6	.5	.3	.6	.3	.6	.7	.7	.5	.7
OTHER	.12	8.5	14.8	16.7	14.6	15	14	13.3	1.4	16.4	14.1
NM TOTALS	64	56.8	63.7	63.9	65.3	65.8	64.5	54.7	63.5	67.3	58.5
<u>TEXAS</u>											
DALLAS	3.8	2.1	3.1	2.4	1.7	2.3	1.9	2.9	2.3	1.9	2.7
AUSTIN	1.5	1.5	2	1.9	1.8	2.1	2	2.9	2.7	1.8	3
AMARILLO	2.1	2.1	1.7	2.9	2.5	3.2	3.6	4.8	4.1	2.3	3.5
HOUSTON	2.3	5	2	2	1.4	1.2	2	2.9	1.7	1.1	1.7
LUBBOCK	2	3.6	3.6	3.7	2.7	3.4	2.9	3.8	3.3	2.4	3.2
EL PASO	.6	.4	.2	.3	.5	.3	.4	.7	.3	.3	.3
OTHER	6.7	9.9	7.7	8.5	7.8	8.9	7.9	12.1	9.7	8.6	12.4
TOTAL TEXAS	19	24.6	23.3	21.7	18.4	21.4	19.7	30.1	24.1	18.4	26.8
<u>OKLAHOMA</u>											
OKLA. (	.7	1.8	.9	1.3	1.1	1.4	1.5	2.6	2	1.8	2.3
TULSA	2	1.3	.9	1	.8	1.1	1	1.7	1.6	1.2	.8
OTHER	.3	.5	1.1	.7	.5	.5	.7	.9	.6	.9	.7
TOTAL OKLAHOMA	3	3.6	2.9	3	2.4	3.1	3.2	5.3	4.2	3.9	3.8
<u>ARIZONA</u>											
TOTAL	.6	.6	.4	.5	.6	.7	.7	.8	.5	.4	.6
<u>COLORADO</u>											
TOTAL	.5	.5	.4	.8	.8	.4	.6	.8	.7	.7	.8
<u>CALIFORNIA</u>											
TOTAL	.9	1.4	.9	1	1	.7	.9	.5	.7	1.3	.9
<u>ALL OTHER STATES</u>											
TOTAL	12	12.4	11.4	9.1	11.6	7.8	10.3	7.8	6.3	8	8.6



## B. Use Distribution

Recreation use in most wildernesses are typically characterized by uneven distribution (Lucas 1980; Stankey and others 1976). This poor distribution increases the potential for resource damage, loss of solitude and damage to trails (Lucas 1985). The use distribution in the Pecos is characterized by uneven distribution (Table 5). Use distribution for entry points and travel zones will be examined.

### 1. Entry Point Use

The Pecos Wilderness has a total of 40 entry points. Table 6 displays 35 of the trailheads and the percentage of use that each one receives. Approximately 52% of the visitor day use was generated from 4 major trailheads in 1973. In 1985 the 4 major trailheads generated 69% of the total use but the Santa Barbara Trailhead (36) was replaced by the Winsor Creek Trailhead (20) as one of the highest 4. The Carson National Forest submission of data after 1981 was sporadic which may account for this shift and the lowering of use of some of the Carson Trailheads.

The Jacks Creek Trailhead (16) had 11.3% of the use in 1973, it has grown to 30.7% in 1985. This significant change is basically a result of improving the trailhead and the increased use of a campground adjacent to the trail. Road improvement planned for 1989 and 1990 should cause even further increase in uses at this trailhead. Field observations indicate the day use from the Winsor Trailhead (23) is significant. This observation would seem to be appropriate because this trailhead is the nearest one to a large community (Santa Fe) and it is the only trailhead on a paved road.

The majority of use is still concentrated at a few trailheads. This is an indicator that efforts to disperse use have not been as effective as managers would have hoped.

TABLE 6

## ENTRY POINTS DISPLAYED BY PERCENT OF USE

ENTRY POINT	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985
15	20.4	20.6	22.7	21.4	20.0	21.8	17.2	19.9	29.6	21.3	22.6	23.9
16	11.3	10.7	14.0	13.0	21.4	17.8	21.9	21.3	39.2	28.8	24.9	30.7
36	10.6	10.5	7.7	10.5	12.1	9.5	11.9	10.9	0.0	1.6	4.5	1.0
23	10.1	13.6	14.4	17.2	.3	15.4	15.4	14.0	1.0	18.9	11.5	6.7
18	7.8	7.0	5.3	4.8	8.1	3.5	3.6	6.3	8.4	3.4	5.0	4.7
20	6.2	7.5	5.3	6.3	7.3	4.4	4.7	4.7	6.6	9.0	3.7	7.6
19	5.6	3.5	5.3	2.8	4.1	5.6	5.4	4.5	4.7	4.3	8.6	6.2
21	4.1	3.3	4.3	3.7	2.0	.9	.1	.5	3.4	2.0	2.3	3.1
35	3.0	3.1	2.7	3.8	4.7	2.7	2.2	2.1	0.0	0.0	1.6	0.0
8	2.5	2.2	2.5	1.0	3.4	2.2	1.3	.6	0.0	0.0	0.0	1.1
38	2.4	1.4	1.0	1.1	1.5	1.1	.8	.6	0.0	0.0	0.0	0.0
33	2.3	1.4	1.7	1.7	1.8	1.2	1.2	1.4	0.0	0.0	1.8	0.0
17	2.1	3.1	2.1	2.3	1.7	2.5	3.3	3.0	4.8	4.8	2.5	4.2
30	1.7	1.6	1.5	1.2	2.2	1.4	1.4	1.3	0.0	.1	5.0	0.0
9	1.2	1.3	.8	1.3	2.3	1.4	2.7	1.0	0.0	0.0	0.0	2.4
3	1.1	1.1	.5	.9	.9	.8	1.3	.3	.8	0.0	0.0	0.0
12	.9	.5	.8	.5	.4	.7	.4	.5	.5	0.0	0.0	.1
34	.8	.6	.2	.2	.4	.6	.3	.8	.1	0.0	0.0	0.0
14	.7	.3	.9	.7	.8	.6	.5	.6	0.0	0.0	0.0	0.0
13	.7	.6	.8	.7	.5	.2	.2	.2	0.0	0.0	0.0	0.0
1	.6	1.0	.7	.8	.7	1.0	1.0	.3	0.0	0.0	.1	0.0
37	.5	.6	.1	.3	.3	.7	.2	.3	0.0	0.0	0.0	0.0
10	.5	.1	.2	.1	.2	0.0	.1	.2	0.0	0.0	0.0	0.0
6	.5	.5	.4	.2	.3	.2	0.0	.1	0.0	0.0	0.0	0.0
25	.4	.4	.1	.2	0.0	.3	.5	.3	0.0	0.0	0.0	0.0
2	.4	1.0	.4	.6	.6	.5	.2	.3	0.0	0.0	0.0	0.0
24	.3	.2	.3	.5	0.0	.2	.2	.3	.1	0.0	0.0	0.0
22	.3	.7	.5	1.0	0.0	.6	.1	.1	0.0	.1	1.5	2.0
26	.2	.3	.2	.2	.3	.3	.3	.4	0.0	0.0	1.0	0.0
4	.2	.4	.1	.1	.2	.2	.2	0.0	0.0	0.0	0.0	0.0
31	.1	.1	.2	.1	.1	0.0	.1	.3	0.0	0.0	0.0	0.0
28	.1	0.0	.1	.1	0.0	.1	.2	.3	0.0	0.0	0.0	0.0
5	.1	.1	0.0	.1	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	.1	0.0	.1	.2	0.0	.2	.1	.2	0.0	0.0	0.0	0.0
27	.1	.2	0.0	.1	.2	0.0	0.0	.1	.1	0.0	0.0	0.0

## MAJOR TRAILHEADS

#16 - JACKS CREEK  
 #20 - WINSOR CREEK  
 # 9 - PORVENIR  
 # 8 - HERMITS PEAK

#15 - IRON GATE  
 #17 - DOC WEILER  
 #22 - LAKE PEAK

#23 - WINSOR TRAIL  
 #36 - SANTA BARBARA  
 #21 - HOLY GHOST

#18 - HORSETHIEF  
 #19 - WINSOR RIDGE  
 #35 - LOS TRAMPAS



## 2. Travel Zone Use

Thirty-four travel zones were designated for the Pecos Wilderness. Table 7 displays the percent of overnight use for each travel zone. Overnight use is displayed as a percent of the total wilderness overnight use that occurred within a specific travel zone. Overnight use was selected because it is an excellent indicator of primary destinations of the users and it also indicates the areas that have the highest potential for resource damage.

Identification of the high use travel zones is essential for recognizing where potential resource and social impacts are likely to occur. Identification of low use zones is also essential for dispersing visitors and developing maintenance plans for wilderness facilities such as trails. Analyzation of table 6 indicates that visitor distribution is poor and there are numerous opportunities to adjust distribution.

The heaviest used travel zone is #10. This travel zone covers the Pecos and the Mora River drainages. Its use has grown from 14.2% in 1974 to 40.7% in 1985. This change appears significant but when the use from travel zones #11, #12, and #13 (enclosed or adjacent to #10) are included the change is 37.9% in 1973 to 46.6% in 1985.

Travel zones #11, #12, and #13 along with #20, #23, #24, #25, #26, #28, and #30 received some restrictions to overnight use in 1976. These use zones are small travel zones near the high mountain lakes (12, 13, 25, 26, and 28), Beatty's Flats (11), Pecos Falls (30), and the Mora Flat area (24). It is apparent that these restrictions reduced the percentage of overnight use in these zones. It appears that the use was transferred to the adjacent zones. Field observations verify this but they also indicate that overnight restrictions in these zones are being violated.

Zone # 27 which surrounds Spirit and Winsor Lake has shown a steady increase from 2.3% in 1974 to 13% in 1985. Some of this increase can be explained as described above but the majority of this change appears to be a valid increase in use in this zone.

Emphasis on visitor contacts should be directed toward travel zones #9, #10, #11, and #27 in addition to the travel zones with overnight stay restrictions (11, 12, 13, 24, 25, 26, 28, and 30).

Travel zones #9, and #18 appear to offer good opportunities for dispersal of visitors because they are near major trailheads and offer many of the same opportunities that the more popular zones do. The development of information for visitors that display opportunities in the lower utilized zones will play an important role in visitor dispersal.









## V. SUMMARY

The typical visit to the Pecos Wilderness consists of a group of two people from within a 150 mile radius of the area. The visit occurred in July or August and usually was of a 3 to 4 day duration. The principle method of travel was hiking. The Jacks Creek (16) or Iron Gate (15) trailheads were most likely the points of entry. The Travel Zone that encompasses the Pecos River and the Mora River drainages (10) was generally the destination.

### 1. More Hikers

Walking is the predominant method of utilizing the wilderness. This use has grown to 90% of all users. In 1967, it was estimated that 38% of the visitors were walkers. This change appears to be relatively stable with little fluctuation in the use percentages in the last 10 years.

### 2. Length of Stay Declining

The average length of time that people utilize the wilderness is declining. In 1973, the average visit was 4.8 visitor days, in 1985 it had declined to 4.3 (3.7 including day use estimates).

### 3. Group Size is Declining

The average group was 3.7 people in 1973. It declined to 3.3 people by 1985. Two party groups were the predominant group size. Use by large groups (15+) declined although it appeared that this use was transferred to the 11-15 group size.

### 4. Predominant Use is Summer

The use periods of July and August were the most heavily utilized times through the analysis period.

### 5. User Origins Little Changed

No significant trends in States of origin could be recognized. It did appear as if more use was coming from areas other than Santa Fe, which indicates a broadening of the use as the wilderness becomes more popular.

### 6. Use Distribution Still a Problem

Most of the trailhead use is concentrated on a few major areas. Trailheads #15 and #16 account for 54% of the use. Travel Zone (se is concentrated. Travel zones #10, #19, and #17 account for 62% of the use. This has grown from 19% in 1973.

Some improvement in the use distribution from the travel zones encompassing the high mountain lakes (12, 13, 24, 25, 26, and 28) Beatty's Flats (11), Pecos Falls (30), and the Mora Flat area (24) has occurred as a result of the overnight restrictions placed on them in 1976.

## VI. MANAGEMENT RECOMMENDATIONS

The analysis of the Pecos Wilderness permit information has provided a valuable database that can help wilderness managers meet the intent of the Wilderness Act and the Santa Fe Land Management Plan. Recommendations for management implementation are described below.

### Pecos Wilderness Use Information

1. Mandatory wilderness permits were dropped in 1986. The ability to maintain a reliable information base will be impaired. A substitute system for information gathering will be needed. A sampling approach appears to be the most efficient method of gathering reliable data.
2. The wilderness permit information that is on file at the Fort Collin Computer Center should be maintained for analysis needs at a future date. The Santa Fe Supervisors Office should be assigned management responsibility to prevent this material from being lost.

### Use Characteristics

3. The average length of stay is declining. In 1985 it had declined to 4.3 visitor days (3.7 including day use). It is also estimated that day use makes up approximately 20% of the total use. These figures indicate that there may be a shortage of opportunities for day hikes and short trips outside of the wilderness. Recreation managers on the Santa Fe and Carson National Forests should begin to explore opportunities for increasing the availability of these types of opportunities outside of the wilderness. In areas where these types of opportunities exist a better job of identifying these alternatives needs to be done. A recreation opportunity inventory should be compiled and made available to the public.
4. The use of the wilderness by large groups (15+) is declining. It appears as if this use is being transferred to groups (11-15) in size. These smaller groups appear to be forming to avoid the 15 group size limitation.

Field observations have validated that many of these smaller groups were in fact a large group that broke up to avoid the regulation. The potential impact from these large groups is evident. More emphasis on visitor education of the large groups is needed.

Wilderness managers generally know the large groups that make use of their area. These groups should be targeted for education on low impact camping and the potential for damage from large groups.



5. Travel by foot is the predominant method of travel in the wilderness. Horse travel has declined significantly from a 1966 study but has remained relatively constant for the last 10 years. The use levels of horse travel and hikers are causing a growing conflict between the user groups. Education of the visitors appears to offer the best hope of reducing the conflict. Each user group should receive training on the needs of the other groups. This type of training should help to build understanding and tolerance of the other user groups.

6. Visitors to the Pecos Wilderness came from all regions of the United States but an average of more than 60% of the visitors came from New Mexico and over 20% were from Texas. Information education programs have traditionally been conducted within New Mexico. It is apparent from this analysis that this should be expanded to the high use communities in Texas. Some general wilderness education efforts need to be conducted nationwide to begin to influence the behavior of people in areas outside of New Mexico and Texas. Some of these contacts can also be made at the trailheads.

#### Distribution of Use

7. The Pecos Wilderness continues to have a distribution of use problem. The areas of high concentrated use are being impacted. Listed below are some recommendations for lessening the impacts.

- a. The high use wilderness zones (9, 10, 19, and 27) along with the restricted zones (11, 12, 13, 24, 25, 26, 28, and 30) should be analyzed utilizing the Limits of Acceptable Change Technology. This analysis should establish social and environmental parameters which will serve as indicators.
- b. Increase the knowledge of receptionist and wilderness information personnel concerning the travel zones and recreation opportunities that currently receive low use. This can be accomplished through field trips and a better sharing of information between wilderness managers that are on the ground and the information personnel that are stationed at ranger stations and trailheads.
- c. Prepare user information that allow wilderness visitors the opportunity to choose between alternative recreation opportunities. Recreation opportunity guides and trail selection brochures are examples.



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